



CARDIAC ASSIST



Timing Guidelines Intra-Aortic Balloon Pump

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Inflation

Goal: To produce a rapid rise in aortic diastolic pressure (optimize AUG), thereby increasing O₂ supply to coronary circulation.

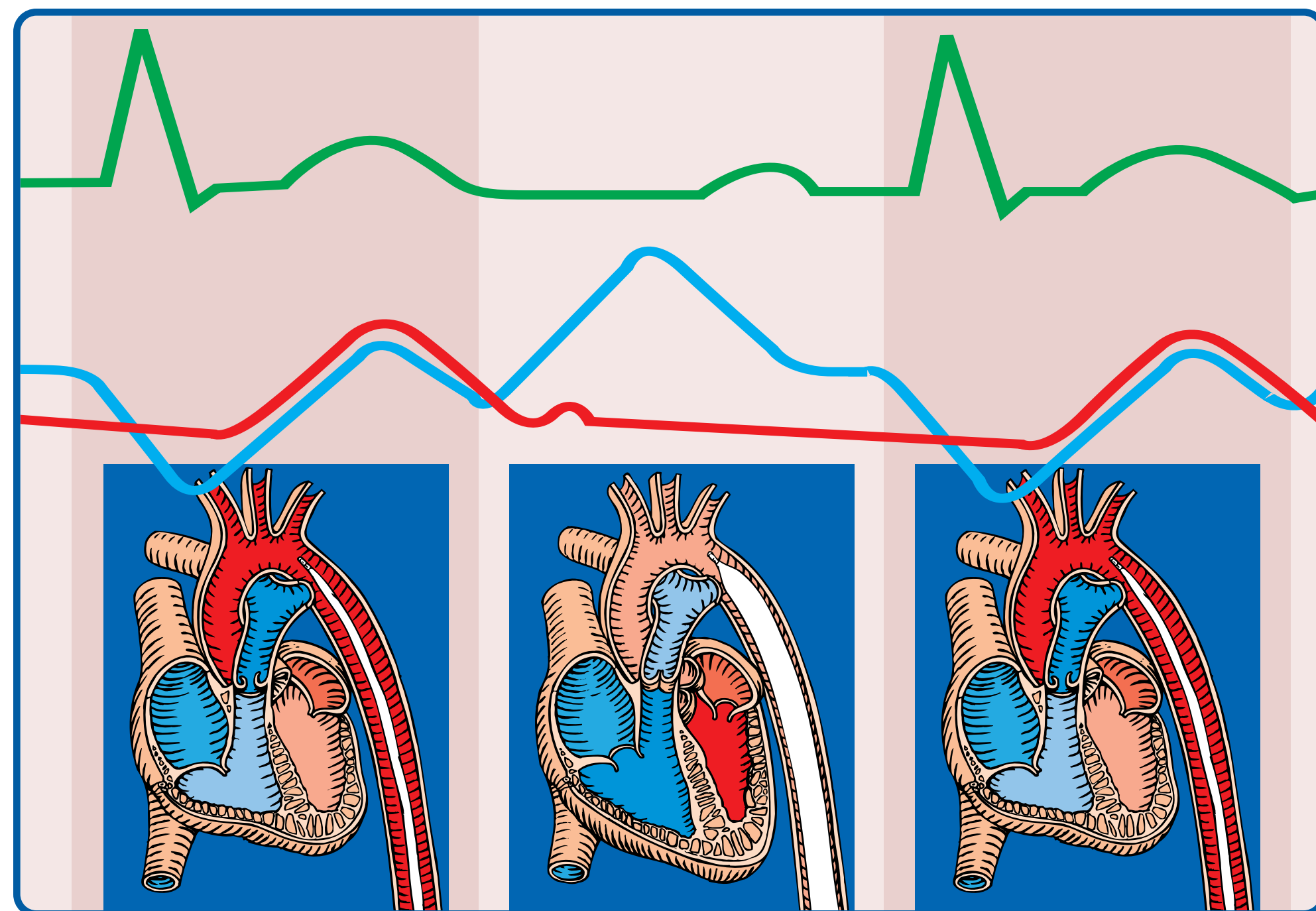
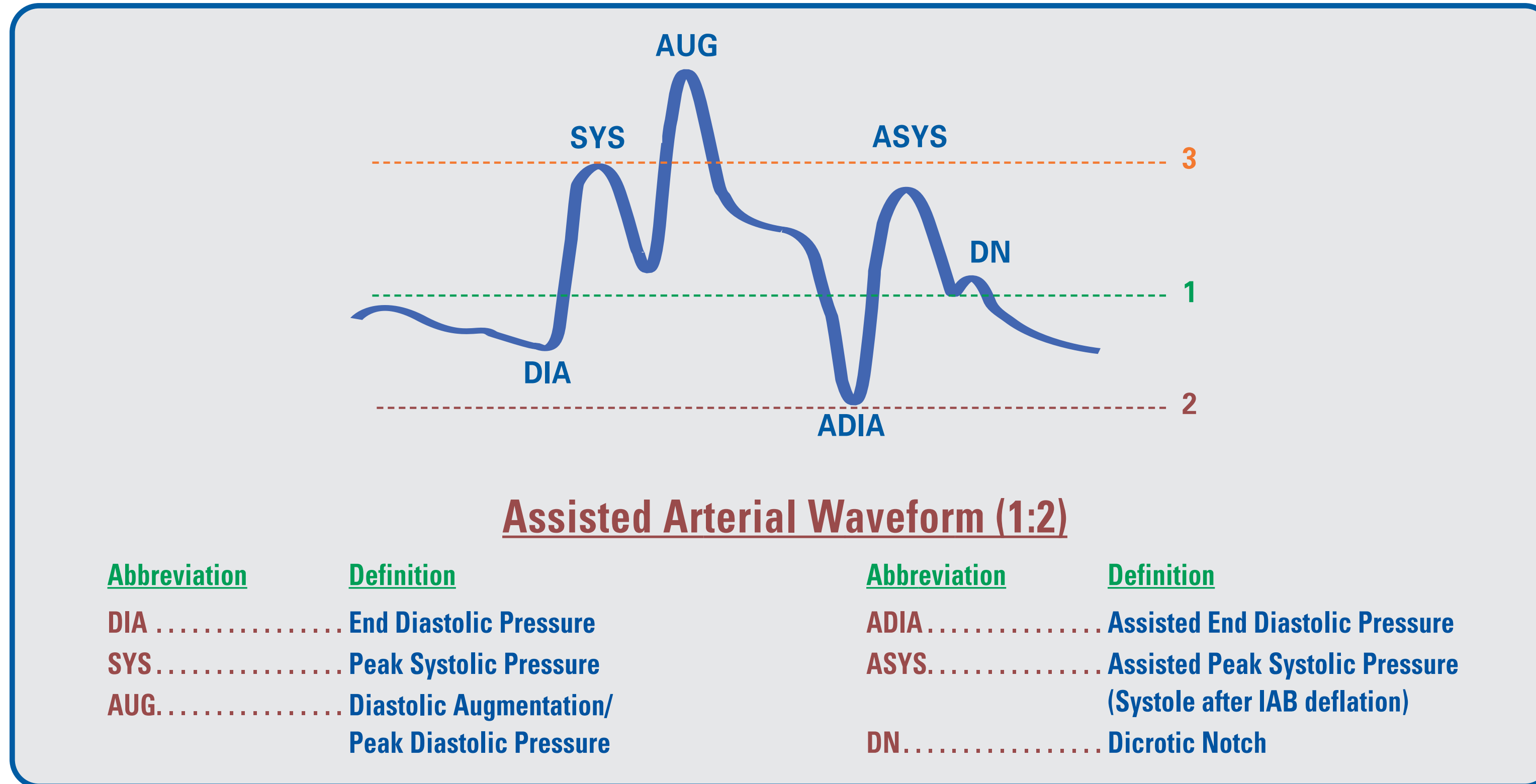
1. Inflate just prior to DN which should result in **AUG > SYS**

Deflation

Goal: To reduce aortic end diastolic pressure (afterload), thereby decreasing MVO₂ while improving the CO (cardiac output).

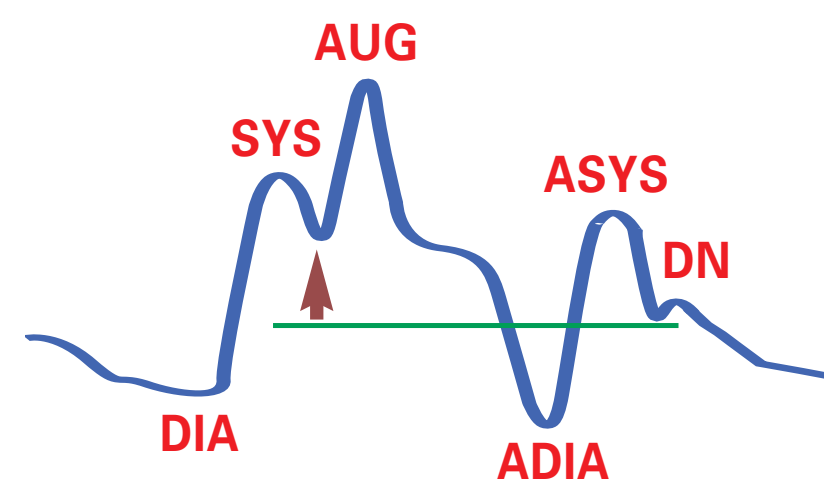
2. **ADIA ≤ DIA**

3. **ASYS < SYS**



Mechanical and Electrical Relationship of ECG, AP and Balloon Inflate/Deflate

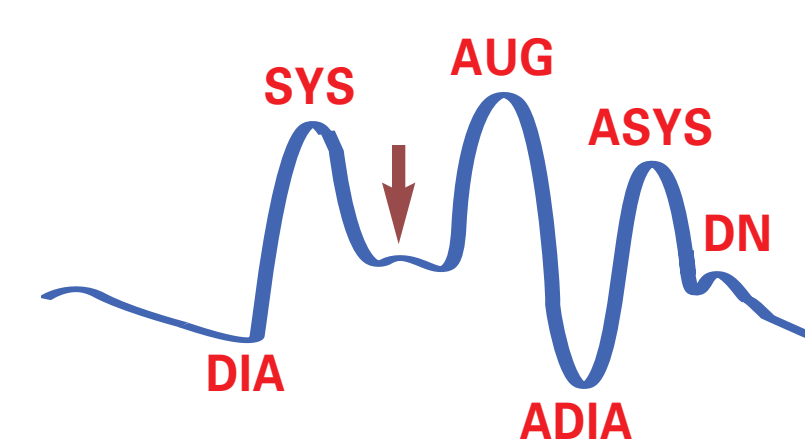
Balloon Inflation and Deflation Timing Common Timing Errors



Early Inflation

IAB is inflated well before actual DN (aortic valve closure.) Violates **Rule 1** for inflation.

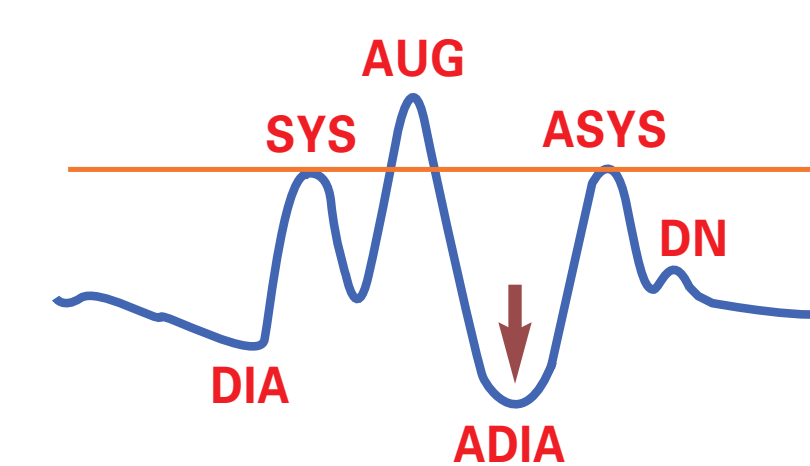
- Result:**
- Premature closure of aortic valve.
 - Reduces stroke volume/CO.
 - Increase in LVED volume.
 - Increase in LV wall tension.



Late Inflation

DN is visible between points SYS/AUG Violates **Rule 1** for inflation.

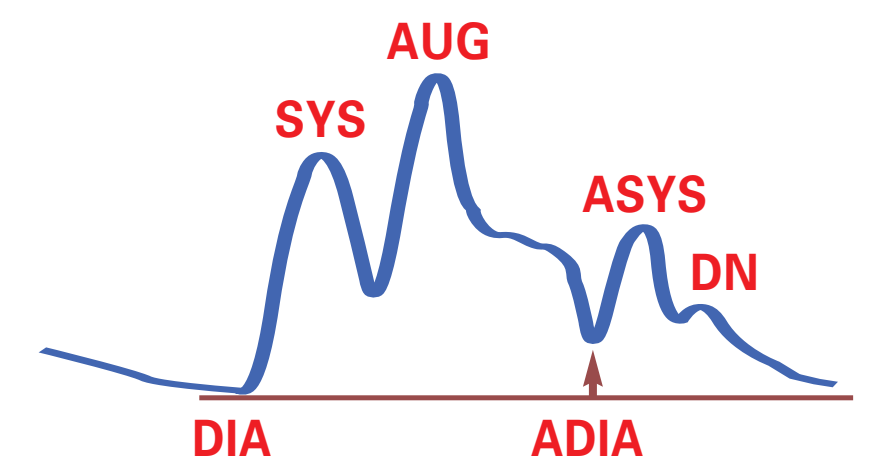
- Result:**
- AUG less than optimum.
 - Decreased perfusion pressure and volume to coronary arteries.



Early Deflation

ASYS = SYS Violates **Rule 3** for deflation. May see "U" shape at ADIA.

- Result:**
- No afterload reduction.



Late Deflation

ADIA > DIA Violates **Rule 2** for deflation.

- Result:**
- Increased workload of left ventricle.
 - Increased MVO₂.

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Caution: U.S. Federal law restricts this device to sale by or on order of a physician. Contents of unopened, undamaged package are sterile. Disposable. Refer to package insert for current warnings, indications, contraindications, precautions, and instructions for use.

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